Complete Summary

TITLE

Urinary tract infection (UTI) admission rate (area level): rate per 100,000 population.

SOURCE(S)

AHRQ quality indicators. Pediatric quality indicators: technical specifications [version 3.2]. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2008 Feb 29. various p.

McDonald K, Romano P, Davies S, Haberland C, Geppert J, Ku A, Choudhry K. Measures of pediatric health care quality based on hospital administrative data: the pediatric quality indicators. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2006 Sep. 130 p. [82 references]

Measure Domain

PRIMARY MEASURE DOMAIN

Population Health

The validity of measures depends on how they are built. By examining the key building blocks of a measure, you can assess its validity for your purpose. For more information, visit the Measure Validity page.

SECONDARY MEASURE DOMAIN

Does not apply to this measure

Brief Abstract

DESCRIPTION

This measure is used to assess the number of patients admitted for urinary tract infection per 100,000 population.

RATIONALE

This indicator is intended to identify hospitalizations for urinary tract infection (UTI), where UTI is identified as the principal reason for hospitalization. Many cases of UTI can be treated in an outpatient setting effectively with early identification and appropriate antibiotic treatment, and will not progress to

pyelonephritis. Patients who are more likely to develop complications requiring hospitalization despite good quality outpatient care are excluded, including those with immunocompromised state and anomalies of the urinary tract and kidneys.

PRIMARY CLINICAL COMPONENT

Urinary tract infection (UTI); hospital admission rates

DENOMINATOR DESCRIPTION

Population in Metro Area or county ages 3 months to 17 years

NUMERATOR DESCRIPTION

All non-maternal discharges ages 3 months to 17 years with International classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) diagnosis code of urinary tract infection (UTI)

Exclude cases:

- transfer from other institution
- with diagnosis code of kidney/urinary tract disorder
- with diagnosis code of high- or intermediate-risk immunocompromised state
- age less than or equal to 90 days (or neonates if age in days is missing)
- Major Diagnostic Category (MDC) 14 (pregnancy, childbirth, and puerperium)

Note: Refer to the original measure documentation for specific ICD-9-CM codes.

Evidence Supporting the Measure

EVIDENCE SUPPORTING THE VALUE OF MONITORING THE ASPECT OF POPULATION HEALTH

- A formal consensus procedure involving experts in relevant clinical, methodological, and organizational sciences
- One or more research studies published in a National Library of Medicine (NLM) indexed, peer-reviewed journal

Evidence Supporting Need for the Measure

NEED FOR THE MEASURE

Variation in health state(s)

EVIDENCE SUPPORTING NEED FOR THE MEASURE

Billings J, Zeital L, Lukomnik J, Carey T, Blank A, Newman L. Analysis of variation in hospital admission rates associated with area income in New York City [unpublished].

Millman M, editor(s). Access to health care in America. Committee on Monitoring Access to Personal Health Care Services. Washington (DC): National Academy Press; 1993. 240 p.

State of Use of the Measure

STATE OF USE

Current routine use

CURRENT USE

Monitoring health state(s)

Application of Measure in its Current Use

CARE SETTING

Ambulatory Care
Community Health Care

PROFESSIONALS RESPONSIBLE FOR HEALTH CARE

Advanced Practice Nurses
Physician Assistants
Physicians
Public Health Professionals

LOWEST LEVEL OF HEALTH CARE DELIVERY ADDRESSED

Counties or Cities

TARGET POPULATION AGE

Age greater than or equal to 3 months and less than 18 years

TARGET POPULATION GENDER

Either male or female

STRATIFICATION BY VULNERABLE POPULATIONS

Unspecified

Characteristics of the Primary Clinical Component

INCIDENCE/PREVALENCE

Unspecified

ASSOCIATION WITH VULNERABLE POPULATIONS

Millman et al. reported that low-income zip codes had 2.8 times more urinary tract infection (UTI) hospitalizations per capita (age 0 to 64) than high-income zip codes in 11 states in 1988. Billings et al. found that low-income zip codes in New York City (where at least 60% of households earned less than $15,000 in 1988, based on adjusted 1980 Census data) had 2.2 times more UTI hospitalizations per capita (age 0 to 64) than high-income zip codes (where less than 17.5% of households earned less than $15,000). Household income explained 28% of the variation in UTI hospitalization rates at the zip code level. These findings suggest that this indicator may be marker for poor access to outpatient care.

EVIDENCE FOR ASSOCIATION WITH VULNERABLE POPULATIONS

Billings J, Zeital L, Lukomnik J, Carey T, Blank A, Newman L. Analysis of variation in hospital admission rates associated with area income in New York City [unpublished].

Millman M, editor(s). Access to health care in America. Committee on Monitoring Access to Personal Health Care Services. Washington (DC): National Academy Press; 1993. 240 p.

BURDEN OF ILLNESS

Unspecified

UTILIZATION

See the "Association with Vulnerable Populations" field.

COSTS

Unspecified

Institute of Medicine National Healthcare Quality Report Categories

IOM CARE NEED

Getting Better

IOM DOMAIN

Effectiveness
Timeliness

Data Collection for the Measure

CASE FINDING

Both users and nonusers of care

DESCRIPTION OF CASE FINDING

Population in Metro Area or county ages 3 months to 17 years

DENOMINATOR SAMPLING FRAME

Geographically defined

DENOMINATOR INCLUSIONS/EXCLUSIONS

Inclusions
Population in Metro Area or county ages 3 months to 17 years

Exclusions
Unspecified

RELATIONSHIP OF DENOMINATOR TO NUMERATOR

All cases in the denominator are not equally eligible to appear in the numerator

DENOMINATOR (INDEX) EVENT

Patient Characteristic

DENOMINATOR TIME WINDOW

Time window is a single point in time

NUMERATOR INCLUSIONS/EXCLUSIONS

Inclusions
All non-maternal discharges ages 3 months to 17 years with International Classification of Disease, Ninth Revision, Clinical Modification (ICD-9-CM) principal diagnosis code of urinary tract infection (UTI)

Exclusions
Exclude cases:

- transfer from other institution
- with diagnosis code of kidney/urinary tract disorder
- with diagnosis code of high- or intermediate-risk immunocompromised state
- age less than or equal to 90 days (or neonates if age in days is missing)
- Major Diagnostic Category (MDC) 14 (pregnancy, childbirth, and puerperium)

Note: Refer to the original measure documentation for specific ICD-9-CM codes.

MEASURE RESULTS UNDER CONTROL OF HEALTH CARE PROFESSIONALS, ORGANIZATIONS AND/OR POLICYMAKERS

The measure results are somewhat or substantially under the control of the health care professionals, organizations and/or policymakers to whom the measure applies.

NUMERATOR TIME WINDOW

Institutionalization

DATA SOURCE

Administrative data

LEVEL OF DETERMINATION OF QUALITY

Does not apply to this measure

TYPE OF HEALTH STATE

Adverse Health State

PRE-EXISTING INSTRUMENT USED

Unspecified

Computation of the Measure

SCORING

Rate

INTERPRETATION OF SCORE

A lower score is desirable

ALLOWANCE FOR PATIENT FACTORS

Analysis by high-risk subgroup (stratification on vulnerable populations)
Analysis by subgroup (stratification on patient factors, geographic factors, etc.)
Risk adjustment method widely or commercially available

DESCRIPTION OF ALLOWANCE FOR PATIENT FACTORS

Risk adjustment of the data is recommended using, at minimum, age and sex.

Application of multivariate signal extraction (MSX) to smooth risk adjusted rates is also recommended.

STANDARD OF COMPARISON

Internal time comparison

Evaluation of Measure Properties

EXTENT OF MEASURE TESTING

The development of the Agency for Healthcare Research and Quality (AHRQ) Pediatric Quality Indicators utilizes a four pronged approach: identification of candidate indicators, literature review, empirical analyses, and panel review. Candidate indicators were identified through both published literature and a brief survey of national organizations. Literature review provided descriptions and evaluations of some candidate indicators and the underlying relationship to quality of care. Empirical analyses were conducted to explore alternative definitions; to assess nationwide rates and hospital variation; and to develop appropriate methods to account for variation in risk. Clinical panel review helped to refine indicator definitions and risk groupings, and to establish face validity in light of the limited evidence from the literature for most pediatric indicators. Information from these sources was used to specify indicator definitions and make recommendations to AHRQ regarding the best indicators for inclusion in the pediatric indicator set.

A structured review of each indicator was undertaken to evaluate face validity (from a clinical perspective). This process mirrored that undertaken during the initial development of the Patient Safety Indicators. Specifically, the panel approach established *consensual validity*, which "extends face validity from one expert to a panel of experts who examine and rate the appropriateness of each item...." The methodology for the structured review was adapted from the RAND/UCLA Appropriateness Method and consisted of an initial independent assessment of each indicator by clinician panelists using an initial questionnaire, a conference call among all panelists, followed by a final independent assessment by clinician panelists using the same questionnaire. The panel process served to refine definitions of some indicators, add new measures, and dismiss indicators with major concerns from further consideration.

Empirical analyses were conducted to provide the clinical panels and peer review participants with additional information about the indicators. These analyses were also used by the development team to test the alternative specifications and the relative contribution of indicator components in the numerator and denominator. These analyses were not intended to inform issues of precision, bias and construct validity, which will be addressed separately. The data source used in the empirical analyses was the 2003 Kids' Inpatient Sample (KID).

Refer to the original measure documentation for additional details.

EVIDENCE FOR RELIABILITY/VALIDITY TESTING

Fitch K, Bernstein SJ, Aguilar MD, et al. The RAND/UCLA appropriateness method user's manual. Santa Monica (CA): RAND; 2001. 109 p.

Green L, Lewis F. Measurement and evaluation in health education and health promotion. Mountain View (CA): Mayfield Publishing Company; 1998.

McDonald K, Romano P, Davies S, Haberland C, Geppert J, Ku A, Choudhry K. Measures of pediatric health care quality based on hospital administrative data: the pediatric quality indicators. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2006 Sep. 130 p. [82 references]

Identifying Information

ORIGINAL TITLE

Urinary tract infection admission rate (PDI 18).

MEASURE COLLECTION

Agency for Healthcare Research and Quality (AHRQ) Quality Indicators

MEASURE SET NAME

Agency for Healthcare Research and Quality (AHRQ) Pediatric Quality Indicators

DEVELOPER

Agency for Healthcare Research and Quality

ADAPTATION

This measure was adapted from the AHRQ Prevention Quality Indicators.

PARENT MEASURE

Urinary Tract Infection Admission Rate (PQI 12) (Agency for Healthcare Research and Quality [AHRQ])

RELEASE DATE

2006 Feb

REVISION DATE

2008 Feb

MEASURE STATUS

This is the current release of the measure.

SOURCE(S)

AHRQ quality indicators. Pediatric quality indicators: technical specifications [version 3.2]. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2008 Feb 29. various p.

McDonald K, Romano P, Davies S, Haberland C, Geppert J, Ku A, Choudhry K. Measures of pediatric health care quality based on hospital administrative data: the pediatric quality indicators. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2006 Sep. 130 p. [82 references]

MEASURE AVAILABILITY

The individual measure, "Urinary Tract Infection Admission Rate (PDI 18)," is published in "Measures of Pediatric Health Care Quality Based on Hospital Administrative Data: The Pediatric Quality Indicators" and "AHRQ Quality Indicators. Pediatric Quality Indicators: Technical Specifications [version 3.2]." These documents are available in Portable Document Format (PDF) from the Pediatric Quality Indicators Download page at the Agency for Healthcare Research and Quality (AHRQ) Quality Indicators Web site.

For more information, please contact the QI Support Team at support@qualityindicators.ahrq.gov.

COMPANION DOCUMENTS

The following are available:

- AHRQ quality indicators. Pediatric quality indicators: software documentation [version 3.2] - SAS. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2008 Mar 10. 40 p. This document is available in Portable Document Format (PDF) from the AHRQ Quality Indicators Web site.
- AHRQ quality indicators. Software documentation: Windows [version 3.1a]. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2007 Apr 6. 99 p. This document is available in PDF from the AHRQ Quality Indicators Web site.
- Pediatric quality indicators (PedQI): covariates [version 3.1]. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2007 Mar 12. 52 p. This document is available in PDF from the AHRQ Quality Indicators Web site.
- Pediatric quality indicators (PedQI): covariates (with POA) [version 3.1]. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2007 Mar 12. 52 p. This document is available in PDF from the AHRQ Quality Indicators Web site.
- HCUPnet. [internet]. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2004 [accessed 2007 May 21]. [Various pagings]. HCUPnet is available from the AHRQ Web site. See the related QualityTools summary.

NQMC STATUS

This NQMC summary was completed by ECRI Institute on December 28, 2007. The information was verified by the measure developer on March 31, 2008.

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